

Solution for Significant Hemidiaphragmatic Paralysis Following Supraclavicular Block

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Introduction

- Brachial plexus blocks (C5-T1) are used for perioperative pain management of the upper extremity
- Phrenic nerve paralysis is a well-known complication of brachial plexus nerve blocks with variability depending on the specific approach
- 15M with no significant PMHx presented for R forearm ORIF for surgical fixation of closed fracture of shaft of R radius and R ulna after injury while playing football

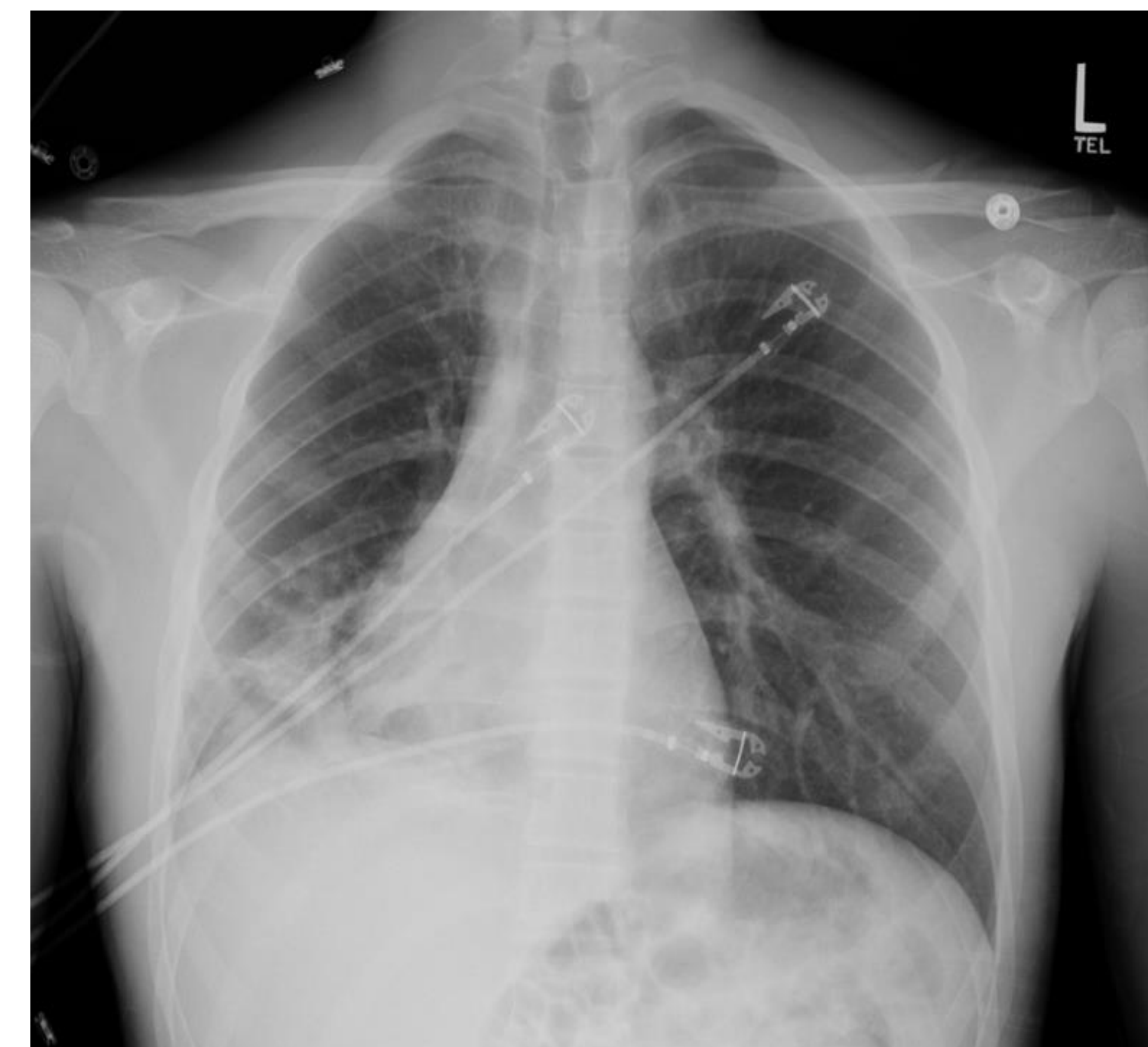
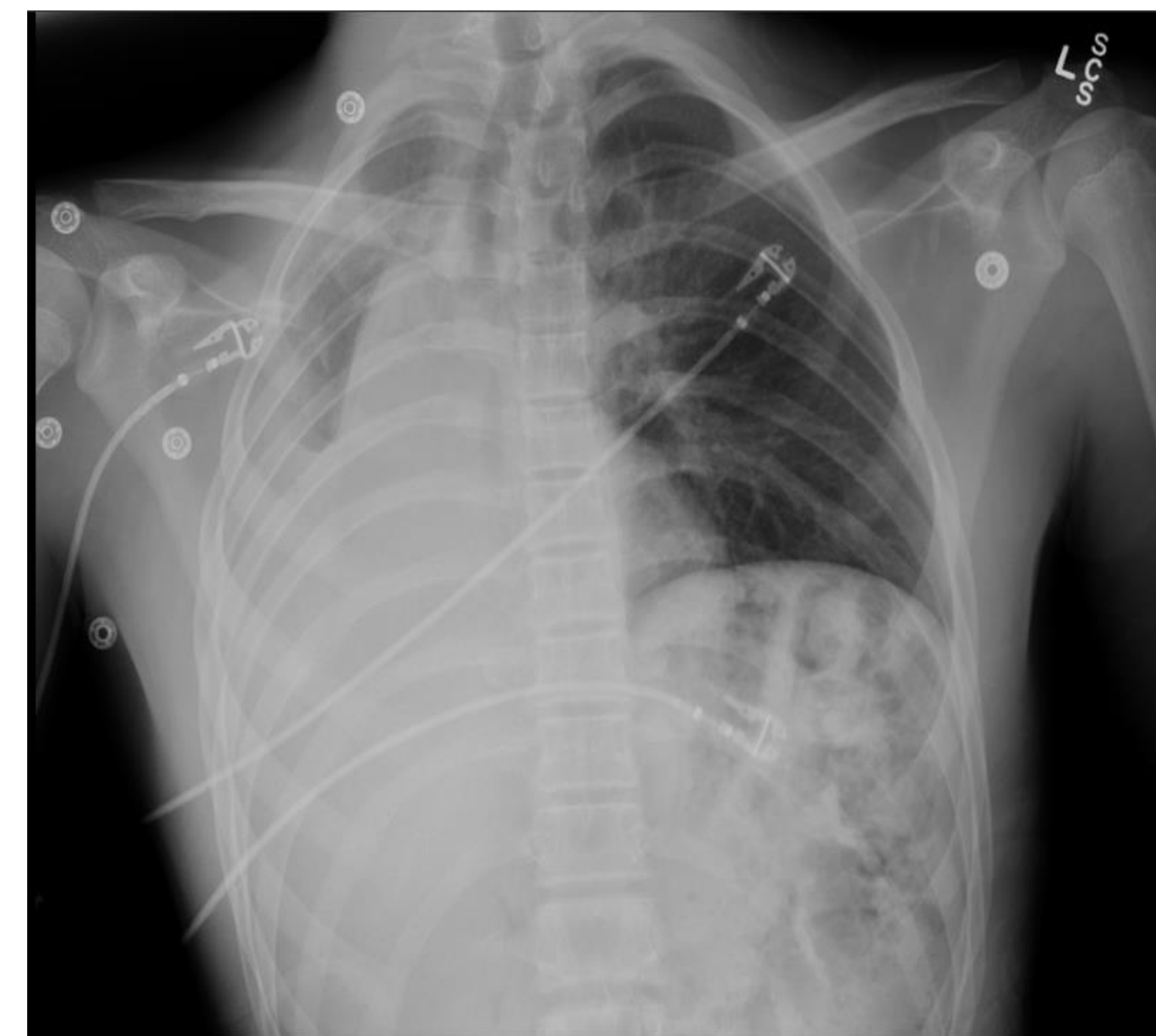
Methods

Pre-operative: Supraclavicular block completed with 30ml 0.5% ropivacaine with 1:200,000 epinephrine using a 22G 2 inch echogenic needle under ultrasound guidance. Procedural intravenous sedation completed with 2mg midazolam and 100mcg fentanyl

Intraoperative: Propofol infusion for operative sedation at 125mcg/kg/min for the duration of the case supplemented with 20mcg dexmedetomidine. PONV prophylaxis with 4mg dexamethasone, 20mg famotidine, and 4mg ondansetron. Total IVF 1250ml.

Case Description

- Immediately after emergence from anesthesia, patient c/o SOB. SpO2 87-88% on RA, improved to 92-93% with 6L O2 via face mask. Lung auscultation revealed decreased breath sounds R side. CXR without evidence of PTX, but with increased opacification of R lung.
- Decision made to inject saline into supraclavicular space to see if dilution of LA would improve symptoms.
- After injection of saline, SOB resolved and SpO2 improved to 100% on RA. Repeat CXR with near complete re-expansion of R lung.



Discussion

- Incidence of phrenic nerve palsy has been reported as high as 50-67% following supraclavicular blocks, but is generally well-tolerated in healthy individuals
- Respiratory complications are more concerning in patients with significant lung disease, such as COPD, or obesity

Conclusions

- In patients with significant respiratory complications from brachial plexus blocks, dilution of the local anesthetic is an easy and effective solution to improve diaphragmatic function

References

Mak PHK, Irwin MG, Ooi CGC, Chow BFM. Incidence of diaphragmatic paralysis following supraclavicular brachial plexus block and its effect on pulmonary function. *Anaesthesia*. 2001;56(4):352-356. doi:10.1046/j.1365-2044.2001.01708-2.x

Petrar SD, Seltenrich ME, Head SJ, Schwarz SK. Hemidiaphragmatic paralysis following ultrasound-guided supraclavicular versus infraclavicular brachial plexus blockade: a randomized clinical trial. *Reg Anesth Pain Med*. 2015;40(2):133-138. doi:10.1097/AAP.0000000000000215